

REMARKS

Entry of the above amendments is respectfully requested. Claims 1, 3, 7, 9 and 14 have been amended. Claims 1-20 remain pending in the application. In view of the present amendments and the below remarks, Applicant respectfully requests reconsideration and allowance of the pending claims.

1. Rejection under 35 U.S.C. § 102(b)

The Examiner rejected claims 1-20 under 35 U.S.C § 102(b) as being anticipated by U.S. Pat. No. 6,044,187 to *Duck et al* (hereafter *Duck et al.*). Applicant respectfully traverses the rejection in view of the present amendments and the below arguments.

a. System of Preferred Embodiment

In one embodiment of the invention, as defined in the amended claims, a filter module for an optical communications system includes a single lens, three optical fibers, an optical filter, and a mirror. The three optical fibers are arranged on a single side of the lens. More particularly, as defined in amended claim 1, the filter module preferably includes a single refraction index distribution type rod lens having a first end face in core alignment with the mirror and a second end face to receive a light beam.

Advantageously, by providing a filter module 1 that includes one refractive index distribution type rod lens 20, filter module 1 can be made smaller and requires fewer processes for core alignment and fixation, thus overcoming a well-understood drawback with prior modules, as detailed at *pp.* 4 and 5 of the Specification. Also, the number of

components that make up the filter module 1 is reduced, permitting significant benefits over existing modules with respect to cost of production.

Another embodiment of the invention, as defined by the claims, provides a demultiplexing/multiplexing unit that includes a plurality of filter modules that are connected in cascade. Each of the filter modules includes a single lens, optical filter, a mirror, and three optical fibers arranged on a single side of the lens, similar in construction to the filter modules of the preferred embodiments described above. As FIG. 4 shows, for example, when a plurality of filter modules 1 are connected in cascade to form a multichannel demultiplexing/multiplexing unit 8, the optical fiber wiring for connecting the individual filter modules 1 becomes straightforward so that no large space is needed. Finally, the above-noted benefits regarding lower production cost and fewer processes for core alignment and fixation apply equally well with this embodiment.

b. Patentability over Cited References

Claim 1 defines a filter module that generally includes a single lens, an optical filter, a mirror, and three optical fibers that are arranged on a single side of said lens. Although *Duck et al.* show input and output fibers on one side of an optical device, *Duck et al.* teach away from the preferred embodiment in that multiple distribution lenses are required which, in turn, require complex alignment processes during fabrication as described in detail in the Background and Specification of the present application (*pp.* 4 and 5, for example). For instance, the embodiment shown in Figure 17 of the *Duck et al.* patent cited by the Examiner includes a first lens 170 and then two collimating lenses 171

and 172 that are offset from each other. These lenses, as described in the patent, are disposed to guide the beams from the divider network, and thus particular alignment is critical. This is in direct contrast to the present invention in which a single lens is used to multiplex and demultiplex light signals, thus facilitating more ready/cost-effective fabrication as described in the Specification. To clarify this feature of the present invention, Applicant has amended claims 1, 7 and 14 to define the filter module (and corresponding demultiplexing/multiplexing unit) as comprising a “single” lens. As such, the present rejection is believed to be obviated.

Moreover, corresponding dependent claims 2-6 and 12-13, 8-11, and 15-20, respectively, each being dependent from these allowable independent claims, are likewise allowable.

Moreover, notwithstanding the above, the *Duck et al.* reference does not disclose a single capillary having a single through hole or opening formed therein for holding three optical fibers, wherein the capillary and the lens are cylindrical and the capillary has substantially the same diameter as that of the lens. This is defined in current claim 17, and for consistency, applicant has amended claims 3 and 9 to clarify this feature of the present invention. Figure 17 of *Duck et al.*, to the contrary, merely shows a single input wave guide and output linear arrays 180 and 182 and decidedly does not disclose a capillary having the same diameter as that of the lens. It is this design that further facilitates the advantages achieved by the present preferred embodiments (fewer processes for core alignment and fixation, economical fabrication, etc.). As such, these claims are allowable for this additional reason.

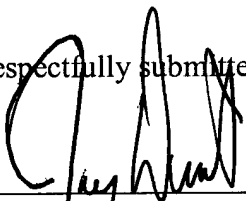
CONCLUSION

In view of the present amendments and above remarks, pending and amended claims 1-20 are believed to be novel and non-obvious over the cited art and an indication to that effect is respectfully requested.

Should the Examiner have any questions or wish to discuss this case further for any reason, he is invited to contact the undersigned at the telephone number appearing below.

Applicant hereby requests a one (1) month extension of time until April 28, 2005. Enclosed is a check in the amount of \$120.00 for the government time extension fee. Should the Examiner consider any other fees to be payable in conjunction with this or any further communication, the Commissioner is authorized to direct payment of such fees or credit any overpayment, to Deposit Account 50-1170.

Respectfully submitted,



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